CLAIMS

1. A method of managing communication, comprising the step of causing a central control station to schedule such that allowance to transmit data is given, as a transmission right, to only one of communication stations in each time period by determining a timing of transmitting data from a communication station that is to transmit the data, to a communication station that is to receive the data, the method comprising the step of:

causing the central control station to carry out the scheduling, by using parameters C, TXOP bound, and T bound, so that a sum of transmission right granted time periods actually granted in a time period {t0, t0 + t} is always equal to or more than C·t – TXOP bound where t0 is an arbitrary time point, C is an average ratio of the sum of the transmission right granted time periods allocated, to the communication station that is to transmit the data, by the central control station according to a reference transmission right allocation, and T delay is a maximum tolerable delay time of the data to be transmitted by the communication station that is to transmit the data, C, TXOP bound, and T bound satisfying following formulas:

Formula 1: $0 \leq T\ bound < T\ delay$;

Formula 2: $0 < C < 1$; and

Formula 3: TXOP bound = C·T bound.

2. A method of managing communication, comprising the step of causing a central control station to schedule such that allowance to transmit data is given, as a transmission right, to only one of communication stations in each time period by determining a timing of transmitting data from a communication station that is to transmit the data, to a communication station that is to receive the data, the method comprising the step of:

causing the central control station to carry out the scheduling, by using parameters C, TXOP1 bound, T1 bound, TXOP2 bound, and T2 bound, so that a sum of transmission right granted time periods actually granted in a time period {t0, t0 + t} is always equal to or more than C·t – TXOP1 bound and equal to or less than C·t + TXOP2 bound where t0 is an arbitrary time point, C is an average ratio of the sum of the transmission right granted time periods allocated, to the communication station that is to transmit the data, by the central control station according to a reference transmission right allocation, and T delay is a maximum tolerable delay time of the data to be transmitted by the communication station that is to transmit the data, C, TXOP1 bound, T1 bound, TXOP2

bound, and T2 bound satisfying the following formulas:

Formula 4: $0 \leq T1\ bound < T\ delay,\ 0 \leq T2\ bound$;

Formula 5: $0 < C < 1$; and

Formula 6: $TXOP1\ bound = C \cdot T1\ bound$,

$TXOP2\ bound = C \cdot T2\ bound$.

3. The method as set forth in claim 1 or 2, wherein:

a communication station transmitting a data packet under a control of the central control station previously reserves, to the control station, information concerning a traffic property of the data packet, and

the central control station uses the information when determining the reference transmission right allocation, the information given from each communication station.

4. The method as set forth in any one of claims 1 to 3, wherein:

the central control station uses a fixed value as a concrete value of TXOP bound or T bound.

5. The method as set forth in any one of claims 1 to 3, comprising the step of causing the central control station to concretely determine TXOP bound or T bound

according to information given from a communication station side.

6. The method as set forth in claim 5, comprising the step of causing the central control station to concretely determine TXOP bound or T bound as a function of "a maximum time interval between two successive times at which polling is desired" T max requested from a communication station side.

7. The method as set forth in claim 6, comprising the step of causing the central control station to concretely determine TXOP bound such that TXOP bound is especially C·T max.

8. The method as set forth in claim 6, comprising the step of causing the central control station to concretely determine T bound such that T bound is especially T max.

9. The method as set forth in claim 5, comprising the step of causing the central control station to concretely determine that TXOP bound or T bound is a function of a smallest value among values of T max of a plurality of streams to be transmitted from the

communication station side, where T max is a maximum time interval between two successive times at which polling is desired.

10. The method as set forth in claim 5, comprising the step of causing the central control station to concretely determine that TXOP bound or T bound is a function of T delay where T delay is a maximum tolerable delay time of the data to be transmitted by the communication station.

11. The method as set forth in claim 5, comprising the step of causing the central control station to concretely determine that TXOP bound or T bound is a function of a smallest value among values of T delay of a plurality of streams to be transmitted by the communication station, where delay is a maximum tolerable delay time of the data to be transmitted by the communication station.

12. The method as set forth in any one of claims 1 to 11, wherein: transmission is burst transmission.

13. The method as set forth in claim 5, comprising the step of causing the central control station to

concretely determine TXOP bound or T bound according to "information concerning which to use, Normal ACK or Group ACK" given from the communication station.

14. A method of managing communication, comprising the step of causing a central control station to judge, according to the formulas as set forth in claims 1 to 13, whether or not a new stream is able to be accepted.

15. A communication station wherein:

the communication station is in a network adopting the method as set forth in any one of claims 1 to 14; and

if the communication station judges that the central control station does not satisfy the method,

the communication station notifies a user of a fact that "the transmission right granting carried out by the central control station does not satisfy minimum requirement" or "due to the central control station, problems occur when transmitting a stream data".

16. A method of managing communication, comprising the step of:

carrying out communication by using a mechanism in which:

(i) in a case in which a central control station

uses the method as set forth in any one of claims 1 to 15, a communication station obtains n by a following formula: using a packet error rate PER and a packet loss rate PLR of a communication path:

$$n = \text{ceiling}\{\log(PLR)/\log(PER)\},$$

where n is a desirable maximum number of times transmission is able to be carried out,

(ii) an average burst output cycle (T burst) is defined as a certain time period equal to or less than a time period T burstmax obtained by dividing, by n, a time period obtained by a formula (an tolerable transmission delay time – TXOP bound/C), and

(iii) a plurality of packets needed to be outputted in T burst are transmitted in a burst manner, and a reception station gives, to a communication station, acknowledgements with respect to the packets at once.

17. A method of managing communication, comprising the step of:

carrying out communication by using a mechanism in which:

(i) in a case in which a central control station uses the method as set forth in any one of claims 1 to 15,

a communication station obtains n by a following formula using a packet error rate PER and a packet loss rate PLR of a communication path:

$$n = \text{ceiling}\{\log(PLR)/\log(PER)\},$$

where n is a desirable maximum number of times transmission is able to be carried out,

(ii) an average burst output cycle (T burst) is defined as a certain time period equal to or less than a time period T burstmax obtained by dividing, by n, a time period obtained by a formula (an tolerable transmission delay time – TXOP bound/C), and

(iii) a plurality of packets needed to be outputted in T burst are transmitted in a burst manner, and a reception station notifies to the communication station, acknowledgements with respect to the packets at once.

18. A method of managing communication, comprising the step of causing a central control station to schedule such that allowance to transmit data is given, as a transmission right, to only one of communication stations in each time period by determining a timing of transmitting data from a communication station that is to

transmit the data, to a communication station that is to receive the data, the method comprising the step of:

causing said one communication station to derive n by a following formula using a packet error rate PER and a packet loss rate of a communication path:

$$n = \text{ceiling } \{\log(PLR)/\log(PER)\}$$

where n is a desirable maximum number of times transmission is able to be carried out; and

notifying the central control station that a time period equal to or less than a time period obtained by dividing, by n, a value of an tolerable transmission delay time T delay is "a maximum time interval between two successive times at which polling is desired".

19. The method as set forth in claim 18, comprising the step of carrying out communication by using a mechanism in which (i) the communication stations calculate a number of packets needed to be outputted in the maximum time interval between two successive times at which polling is desired, (ii) the packets are transmitted in a burst manner, and (iii) a reception station gives, to the communication station, acknowledgements with respect to a plurality of the

received packets at once.

20. The method as set forth in any one of claims 16 to 19, wherein: the communication stations use, as a concrete value of the packet error rate PER, a value of PER actually measured by each communication station.

21. The method as set forth in any one of claims 16 to 19, wherein: the communication stations use a fixed value as a concrete value of the packet error rate PER.

22. The method as set forth in any one of claims 1 to 21, being adopted especially in a wireless network.

23. The method as set forth in any one of claims 1 to 21, being adopted especially in a power line network.

24. The method as set forth in any one of claims 1 to 22, using a communication method conforming to IEEE Std 802.11e/D3.3 2002.

25. A central control station, managing communication according to the method as set forth in any one of claims 1 to 24.

26. A communication station, carrying out communication according to the method as set forth in any one of claims 1 to 24.

27. A communication managing program for causing a computer to execute the steps of the method as set forth in any one of claims 1 to 24.

28. A computer-readable recording medium storing a program for managing communication, wherein the computer-readable recording medium stores the program as set forth in claim 27.